Nuclear Energy University Programs

NEUP Quality Assurance

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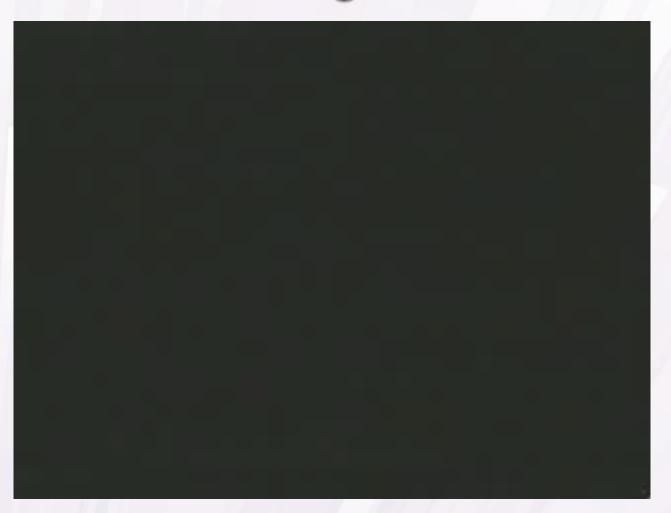
Delivering The Goods Requires Good Quality Assurance (QA)

"It's not about writing research papers anymore, you've got to deliver the goods."

Secretary of Energy Dr. Steven Chu



Video on Delivering the Goods





Why is Quality Assurance Important?

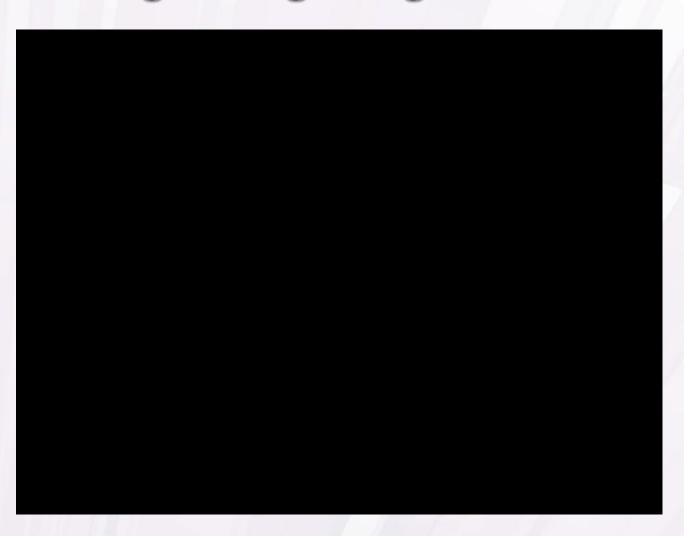
- QA is crucial for the success of the nuclear renaissance
 - We are not merely conducting QA for the sake of meeting regulatory requirements or ensuring that work continues to get funded
- We can't afford another 30 years of the same nuclear energy setbacks

QA is crucial to:

- Gaining the trust of the American people
- Ensuring the future of nuclear energy
- Ensuring we have sustainable power production
- Maintaining national security



QA is Doing Things Right the First Time





Why Quality is Necessary

- Research shows that for every Quality defect, issue or problem not found (or found and NOT solved) during R&D through design, the cost is approximately 100 times more to fix after it has been implemented (this does not include legal costs)
- Most Quality problems do not cause immediate problems and sometimes take years to show up, but the consequences are significant, costly and sometimes fatal when they do!



Why Quality is Necessary: An Example

- ◆ 34 people died due to Toyota's Quality Problems with their gas pedal and braking system. (Quality problem became a safety problem)
- ♦ 8.5 million vehicles were recalled worldwide
- The cost of quality has been estimated at well over 2.5 billion dollars
- 20% of customers switched to another car brand
- Congress called for criminal investigation into Quality and Safety problems



Lessons From History

- Quote from GAO Report: Audits at Yucca Mountain identified quality assurance problems in three areas:
 - Data sources
 - Validation of scientific models
 - Software development
- DOE could not ensure that all the data needed to support the scientific models could be tracked back to original sources or that the data had been properly collected
- DOE had no standardized process to develop the scientific models needed to simulate geological events
- DOE had no process for ensuring that the software being developed to support the models would work



Why Quality Assurance is Necessary for Universities

- Universities are now under contracts, which require flow down of QA requirements in accordance with DOE Order 414.1C/D Quality Assurance
- All university contracts contain QA requirements
- University research products must meet QA requirements to be qualified by the NE Program or end user
- Universities are key to the renaissance of the nuclear industry
- We must train and educate students on QA



Why Quality Assurance is Necessary for Universities (Cont'd)

- In order to deliver the goods when it comes to QA, the QA requirements flowed down to the university must be understood and followed
- There will be no second chances to make a first impression regarding the renaissance of the nuclear industry



Open Communication is Essential to Our Success





FY 2011 Assist Visits

- North Carolina State University March 2011
- ◆ Texas A&M University April 2011
- Idaho State University August 2011
- ◆ Georgia Tech September 2011



Lessons Learned from Assist Visits

Strengths:

- Students are highly motivated and eager to do the right thing
- Faculty are highly engaged with the students and are great mentors and are willing to continue to learn and take advice regarding QA application
- There are pockets of excellence in each university visited
- Universities are embracing the QA requirements



Lessons Learned from Assist Visits

What can be improved:

- Consistency in documenting and maintaining the research results
- Equipment calibration, if necessary, for the validation of the end results
- Copying/Backing up and maintaining/controlling records
- Conducting training and documenting the training
- More consistent research planning to guide the results and provide the pedigree



FY 2012 Tentative Assist Visits

- University of Wisconsin, Madison October 2011
- University of Nevada, Las Vegas February 2012
- University of California, Berkeley April 2012
- University of Michigan June 2012
- ◆ California State University, Long Beach July 2012
- Rensselaer Polytechnic Institute September 2012